



## SEQUENCE LISTING

<10> Rotin, Daniela and Pham, Nam

<120> RAS Activator Nucleic Acid Molecules, Polypeptides and  
Methods of Use

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<212> DNA

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gcctaagtgt agcaaccatc tgctcacagc tgctattaac cctataatga ctgaaatgac 5892  
ccctccactc tattttttgtg ttgttttgca cagactccgg aaaagtgaag gctgccaatc 5952



tgagtagtac tcaaagtga ggaactgctg gtcttgatt tttttccat taaattcagc 6012  
 tgatcatatt gatcagtaga taaacgtaaa tagcttcaaa ttttaaaagt ggaattgcag 6072  
 tgttttttca ctgtatcaaa caatgtcagt gctttattta ataattctct tctgtatcat 6132  
 ggcatttgct tacttgctta ttacattgct aattatgcat ttgtaatttt acatgtaata 6192  
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 gatttcctca tacttttgat actacttgta cctgtatgct ttttagaaag acattgggtg 6432  
 agtctgtatc ccttttgat ttttaataca ataattgtac atattgggta tatttttggt 6492  
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 taaataaata taacat 6568

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 <212> PRT  
 <213> Homo sapiens

<400> 2  
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 Glu Lys His Ser Leu Pro Ala Asp Phe Thr Lys Leu His Leu Thr Asp  
 20 25 30  
 Ser Leu His Pro Gln Val Thr His Val Ser Ser Ser His Ser Gly Cys  
 35 40 45  
 Ser Ile Thr Ser Asp Ser Gly Ser Ser Ser Leu Ser Asp Ile Tyr Gln  
 50 55 60  
 Ala Thr Glu Ser Glu Ala Gly Asp Met Asp Leu Ser Gly Leu Pro Glu  
 65 70 75 80  
 Thr Ala Val Asp Ser Glu Asp Asp Asp Asp Glu Glu Asp Ile Glu Arg  
 85 90 95  
 Ala Ser Asp Pro Leu Met Ser Arg Asp Ile Val Arg Asp Cys Leu Glu  
 100 105 110  
 Lys Asp Pro Ile Asp Arg Thr Asp Asp Asp Ile Glu Gln Leu Leu Glu  
 115 120 125  
 Phe Met His Gln Leu Pro Ala Phe Ala Asn Met Thr Met Ser Val Arg  
 130 135 140  
 Arg Glu Leu Cys Ala Val Met Val Phe Ala Val Val Glu Arg Ala Gly  
 145 150 155 160  
 Thr Ile Val Leu Asn Asp Gly Glu Glu Leu Asp Ser Trp Ser Val Ile  
 165 170 175  
 Leu Asn Gly Ser Val Glu Val Thr Tyr Pro Asp Gly Lys Ala Glu Ile  
 180 185 190  
 Leu Cys Met Gly Asn Ser Phe Gly Val Ser Pro Thr Met Asp Lys Glu  
 195 200 205  
 Tyr Met Lys Gly Val Met Arg Thr Lys Val Asp Asp Cys Gln Phe Val  
 210 215 220

Cys	Ile	Ala	Gln	Gln	Asp	Tyr	Cys	Arg	Ile	Leu	Asn	Gln	Val	Glu	Lys	225	230	235	240
Asn	Met	Gln	Lys	Val	Glu	Glu	Glu	Gly	Glu	Ile	Val	Met	Val	Lys	Glu	245	250	255	
His	Arg	Glu	Leu	Asp	Arg	Thr	Gly	Thr	Arg	Lys	Gly	His	Ile	Val	Ile	260	265	270	
Lys	Gly	Thr	Ser	Glu	Arg	Leu	Thr	Met	His	Leu	Val	Glu	Glu	His	Ser	275	280	285	
Val	Val	Asp	Pro	Thr	Phe	Ile	Glu	Asp	Phe	Leu	Leu	Thr	Tyr	Arg	Thr	290	295	300	
Phe	Leu	Ser	Ser	Pro	Met	Glu	Val	Gly	Lys	Lys	Leu	Leu	Glu	Trp	Phe	305	310	315	320
Asn	Asp	Pro	Ser	Leu	Arg	Asp	Lys	Val	Thr	Arg	Val	Val	Leu	Leu	Trp	325	330	335	
Val	Asn	Asn	His	Phe	Asn	Asp	Phe	Glu	Gly	Asp	Pro	Ala	Met	Thr	Arg	340	345	350	
Phe	Leu	Glu	Glu	Phe	Glu	Asn	Asn	Leu	Glu	Arg	Glu	Lys	Met	Gly	Gly	355	360	365	
His	Leu	Arg	Leu	Leu	Asn	Ile	Ala	Cys	Ala	Ala	Lys	Ala	Lys	Arg	Arg	370	375	380	
Leu	Met	Thr	Leu	Thr	Lys	Pro	Ser	Arg	Glu	Ala	Pro	Leu	Pro	Phe	Ile	385	390	395	400
Leu	Leu	Gly	Gly	Ser	Glu	Lys	Gly	Phe	Gly	Ile	Phe	Val	Asp	Ser	Val	405	410	415	
Asp	Ser	Gly	Ser	Lys	Ala	Thr	Glu	Ala	Gly	Leu	Lys	Arg	Gly	Asp	Gln	420	425	430	
Ile	Leu	Glu	Val	Asn	Gly	Gln	Asn	Phe	Glu	Asn	Ile	Gln	Leu	Ser	Lys	435	440	445	
Ala	Met	Glu	Ile	Leu	Arg	Asn	Asn	Thr	His	Leu	Ser	Ile	Thr	Val	Lys	450	455	460	
Thr	Asn	Leu	Phe	Val	Phe	Lys	Glu	Leu	Leu	Thr	Arg	Leu	Ser	Glu	Glu	465	470	475	480
Lys	Arg	Asn	Gly	Ala	Pro	His	Leu	Pro	Lys	Ile	Gly	Asp	Ile	Lys	Lys	485	490	495	
Ala	Ser	Arg	Tyr	Ser	Ile	Pro	Asp	Leu	Ala	Val	Asp	Val	Glu	Gln	Val	500	505	510	
Ile	Gly	Leu	Glu	Lys	Val	Asn	Lys	Lys	Ser	Lys	Ala	Asn	Thr	Val	Gly	515	520	525	
Gly	Arg	Asn	Lys	Leu	Lys	Lys	Ile	Leu	Asp	Lys	Thr	Arg	Ile	Ser	Ile	530	535	540	
Leu	Pro	Gln	Lys	Pro	Tyr	Asn	Asp	Ile	Gly	Ile	Gly	Gln	Ser	Gln	Asp	545	550	555	560
Asp	Ser	Ile	Val	Gly	Leu	Arg	Gln	Thr	Lys	His	Ile	Pro	Thr	Ala	Leu	565	570	575	
Pro	Val	Ser	Gly	Thr	Leu	Ser	Ser	Ser	Asn	Pro	Asp	Leu	Leu	Gln	Ser	580	585	590	
His	His	Arg	Ile	Leu	Asp	Phe	Ser	Ala	Thr	Pro	Asp	Leu	Pro	Asp	Gln	595	600	605	
Val	Leu	Arg	Val	Phe	Lys	Ala	Asp	Gln	Gln	Ser	Arg	Tyr	Ile	Met	Ile	610	615	620	
Ser	Lys	Asp	Thr	Thr	Ala	Lys	Glu	Val	Val	Ile	Gln	Ala	Ile	Arg	Glu	625	630	635	640
Phe	Ala	Val	Thr	Ala	Thr	Pro	Asp	Gln	Tyr	Ser	Leu	Cys	Glu	Val	Ser	645	650	655	
Val	Thr	Pro	Glu	Gly	Val	Ile	Lys	Gln	Arg	Arg	Leu	Pro	Asp	Gln	Leu	660	665	670	
Ser	Lys	Leu	Ala	Asp	Arg	Ile	Gln	Leu	Ser	Gly	Arg	Tyr	Tyr	Leu	Lys				

675					680					685					
Asn	Asn	Met	Glu	Thr	Glu	Thr	Leu	Cys	Ser	Asp	Glu	Asp	Ala	Gln	Glu
690					695					700					
Leu	Leu	Arg	Glu	Ser	Gln	Ile	Ser	Leu	Leu	Gln	Leu	Ser	Thr	Val	Glu
705					710					715					720
Val	Ala	Thr	Gln	Leu	Ser	Met	Arg	Asn	Phe	Glu	Leu	Phe	Arg	Asn	Ile
				725					730					735	
Glu	Pro	Thr	Glu	Tyr	Ile	Asp	Asp	Leu	Phe	Lys	Leu	Arg	Ser	Lys	Thr
			740				745					750			
Ser	Cys	Ala	Asn	Leu	Lys	Arg	Phe	Glu	Glu	Val	Ile	Asn	Gln	Glu	Thr
		755				760					765				
Phe	Trp	Val	Ala	Ser	Glu	Ile	Leu	Arg	Glu	Thr	Asn	Gln	Leu	Lys	Arg
770					775					780					
Met	Lys	Ile	Ile	Lys	His	Phe	Ile	Lys	Ile	Ala	Leu	His	Cys	Arg	Glu
785					790					795					800
Cys	Lys	Asn	Phe	Asn	Ser	Met	Phe	Ala	Ile	Ile	Ser	Gly	Leu	Asn	Leu
				805					810					815	
Ala	Pro	Val	Ala	Arg	Leu	Arg	Thr	Thr	Trp	Glu	Lys	Leu	Pro	Asn	Lys
			820				825						830		
Tyr	Glu	Lys	Leu	Phe	Gln	Asp	Leu	Gln	Asp	Leu	Phe	Asp	Pro	Ser	Arg
		835				840					845				
Asn	Met	Ala	Lys	Tyr	Arg	Asn	Val	Leu	Asn	Ser	Gln	Asn	Leu	Gln	Pro
850					855					860					
Pro	Ile	Ile	Pro	Leu	Phe	Pro	Val	Ile	Lys	Lys	Asp	Leu	Thr	Phe	Leu
865					870					875					880
His	Glu	Gly	Asn	Asp	Ser	Lys	Val	Asp	Gly	Leu	Val	Asn	Phe	Glu	Lys
				885				890						895	
Leu	Arg	Met	Ile	Ala	Lys	Glu	Ile	Arg	His	Val	Gly	Arg	Met	Ala	Ser
			900				905					910			
Val	Asn	Met	Asp	Pro	Ala	Leu	Met	Phe	Arg	Thr	Arg	Lys	Lys	Lys	Trp
		915				920					925				
Arg	Ser	Leu	Gly	Ser	Leu	Ser	Gln	Gly	Ser	Thr	Asn	Ala	Thr	Val	Leu
930					935					940					
Asp	Val	Ala	Gln	Thr	Gly	Gly	His	Lys	Lys	Arg	Val	Arg	Arg	Ser	Ser
945					950					955					960
Phe	Leu	Asn	Ala	Lys	Lys	Leu	Tyr	Glu	Asp	Ala	Gln	Met	Ala	Arg	Lys
				965				970						975	
Val	Lys	Gln	Tyr	Leu	Ser	Asn	Leu	Glu	Leu	Glu	Met	Asp	Glu	Glu	Ser
			980				985					990			
Leu	Gln	Thr	Leu	Ser	Leu	Gln	Cys	Glu	Pro	Ala	Thr	Asn	Thr	Leu	Pro
		995				1000					1005				
Lys	Asn	Pro	Gly	Asp	Lys	Lys	Pro	Val	Lys	Ser	Glu	Thr	Ser	Pro	Val
1010					1015					1020					
Ala	Pro	Arg	Ala	Gly	Ser	Gln	Gln	Lys	Ala	Gln	Ser	Leu	Pro	Gln	Pro
1025					1030				1035						1040
Gln	Gln	Gln	Pro	Pro	Pro	Ala	His	Lys	Ile	Asn	Gln	Gly	Leu	Gln	Val
				1045				1050						1055	
Pro	Ala	Val	Ser	Leu	Tyr	Pro	Ser	Arg	Lys	Lys	Val	Pro	Val	Lys	Asp
		1060				1065					1070				
Leu	Pro	Pro	Phe	Gly	Ile	Asn	Ser	Pro	Gln	Ala	Leu	Lys	Lys	Ile	Leu
1075					1080					1085					
Ser	Leu	Ser	Glu	Glu	Gly	Ser	Leu	Glu	Arg	His	Lys	Lys	Gln	Ala	Glu
1090					1095					1100					
Asp	Thr	Ile	Ser	Asn	Ala	Ser	Ser	Gln	Leu	Ser	Ser	Pro	Pro	Thr	Ser
1105					1110				1115						1120
Pro	Gln	Ser	Ser	Pro	Arg	Lys	Gly	Tyr	Thr	Leu	Ala	Pro	Ser	Gly	Thr
				1125				1130						1135	

Val Asp Asn Phe Ser Asp Ser Gly His Ser Glu Ile Ser Ser Arg Ser  
 1140 1145 1150  
 Ser Ile Val Ser Asn Ser Ser Phe Asp Ser Val Pro Val Ser Leu His  
 1155 1160 1165  
 Asp Glu Arg Arg Gln Arg His Ser Val Ser Ile Val Glu Thr Asn Leu  
 1170 1175 1180  
 Gly Met Gly Arg Met Glu Arg Arg Thr Met Ile Glu Pro Asp Gln Tyr  
 1185 1190 1195 1200  
 Ser Leu Gly Ser Tyr Ala Pro Met Ser Glu Gly Arg Gly Leu Tyr Ala  
 1205 1210 1215  
 Thr Ala Thr Val Ile Ser Ser Pro Ser Thr Glu Glu Leu Ser Gln Asp  
 1220 1225 1230  
 Gln Gly Asp Arg Ala Ser Leu Asp Ala Ala Asp Ser Gly Arg Gly Ser  
 1235 1240 1245  
 Trp Thr Ser Cys Ser Ser Gly Ser His Asp Asn Ile Gln Thr Ile Gln  
 1250 1255 1260  
 His Gln Arg Ser Trp Glu Thr Leu Pro Phe Gly His Thr His Phe Asp  
 1265 1270 1275 1280  
 Tyr Ser Gly Asp Pro Ala Gly Leu Trp Ala Ser Ser Ser His Met Asp  
 1285 1290 1295  
 Gln Ile Met Phe Ser Asp His Ser Thr Lys Tyr Asn Arg Gln Asn Gln  
 1300 1305 1310  
 Ser Arg Glu Ser Leu Glu Gln Ala Gln Ser Arg Ala Ser Trp Ala Ser  
 1315 1320 1325  
 Ser Thr Gly Tyr Trp Gly Glu Asp Ser Glu Gly Asp Thr Gly Thr Ile  
 1330 1335 1340  
 Lys Arg Arg Gly Gly Lys Asp Val Ser Ile Glu Ala Glu Ser Ser Ser  
 1345 1350 1355 1360  
 Leu Thr Ser Val Thr Thr Glu Glu Thr Lys Pro Val Pro Met Pro Ala  
 1365 1370 1375  
 His Ile Ala Val Ala Ser Ser Thr Thr Lys Gly Leu Ile Ala Arg Lys  
 1380 1385 1390  
 Glu Gly Arg Tyr Arg Glu Pro Pro Thr Pro Pro Gly Tyr Ile Gly  
 1395 1400 1405  
 Ile Pro Ile Thr Asp Phe Pro Glu Gly His Ser His Pro Ala Arg Lys  
 1410 1415 1420  
 Pro Pro Asp Tyr Asn Val Ala Leu Gln Arg Ser Arg Met Val Ala Arg  
 1425 1430 1435 1440  
 Ser Ser Asp Thr Ala Gly Pro Ser Ser Val Gln Gln Pro His Gly His  
 1445 1450 1455  
 Pro Thr Ser Ser Arg Pro Val Asn Lys Pro Gln Trp His Lys Pro Asn  
 1460 1465 1470  
 Glu Ser Asp Pro Arg Leu Ala Pro Tyr Gln Ser Gln Gly Phe Ser Thr  
 1475 1480 1485  
 Glu Glu Asp Glu Asp Glu Gln Val Ser Ala Val  
 1490 1495

<210> 3

<211> 799

<212> DNA

<213> Mus musculus

<400> 3

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agcatggtgc ccgtagctac agaggaagcc aaacctgtcc ctatgcctgc ccacatagct 180
gtgacgccga gcactaccaa gggactcatc gcacggaagg aaggcaggta ccgggagccg 240
cctcccacac ctccaggcta cgtgggcatc cccattgccg atttcccaga agggccttgc 300
caccgggcca ggaagcccc ggattacaac gtggccctgc agcgggtccc catggtggca 360
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gagccttggc acgcacatct gaggatggtg gaccagtttg cctccttccc tgccttaaag 660
cagcatgggg cttcttctcc ctttcttctt tcccccttg catgtgaaat actgtgaaga 720
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<210> 4  
 <211> 286  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SIMILAR  
 <222>  
 <223> Xaa is any aa

<400> 4  
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 Glu Leu Val Asp Pro Pro Gly Cys Arg Asn Ser Ser Gly Gly Lys Asp  
 20 25 30  
 Val Ser Ala Glu Ala Glu Ser Ser Ser Met Val Pro Val Thr Thr Glu  
 35 40 45  
 Glu Ala Lys Pro Val Pro Met Pro Ala His Ile Ala Val Thr Pro Ser  
 50 55 60  
 Thr Thr Lys Gly Leu Ile Ala Arg Lys Glu Gly Arg Tyr Arg Glu Pro  
 65 70 75 80  
 Pro Pro Thr Pro Pro Gly Tyr Val Gly Ile Pro Ile Ala Asp Phe Pro  
 85 90 95  
 Glu Gly Pro Cys His Pro Ala Arg Lys Pro Pro Asp Tyr Asn Val Ala  
 100 105 110  
 Leu Gln Arg Ser Arg Met Val Ala Arg Pro Thr Glu Ala Pro Ala Pro  
 115 120 125  
 Gly Gln Thr Pro Pro Ala Ala Ala Ser Arg Pro Gly Ser Lys Pro  
 130 135 140  
 Gln Trp His Lys Pro Ser Asp Ala Asp Pro Arg Leu Ala Pro Phe Gln  
 145 150 155 160  
 Ala Ala Ser His Ser Gly Thr Ser Pro Ala Thr Gln Thr His Ala Ser  
 165 170 175

Arg	Pro	Ser	Arg	Gln	Ala	Ser	Gln	Glu	Arg	Arg	Arg	Thr	Lys	Met	Asn
			180					185					190		
Lys	Cys	Leu	Leu	Phe	Glu	Ala	Gln	Ala	Pro	Xaa	Ser	Thr	Val	Ser	His
		195					200					205			
Pro	Lys	Glu	Ser	Thr	Arg	Arg	Arg	Pro	Lys	Pro	Trp	Ser	Leu	Gly	Thr
	210					215					220				
His	Ile	Xaa	Gly	Trp	Trp	Thr	Ser	Leu	Pro	Pro	Ser	Leu	Pro	Xaa	Ser
225					230					235					240
Ser	Met	Gly	Leu	Leu	Leu	Pro	Phe	Phe	Leu	Ser	Pro	Leu	His	Val	Lys
			245						250					255	
Tyr	Cys	Glu	Glu	Ile	Ala	Leu	Ala	Leu	Cys	Arg	Leu	Val	Ala	Xaa	Asn
		260						265					270		
Ala	Gln	Pro	Ser	Ser	Pro	Xaa	Ala	Ala	Ala	Cys	His	Val	Thr		
	275					280						285			

<210> 5  
 <211> 245  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SIMILAR  
 <222>  
 <223> Xaa is any aa

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Leu	Lys	Gly	Thr	Lys	Ala	Gly	Ala	Pro	Pro	Arg	Trp	Arg	Pro	Leu	Xaa
1				5					10					15	
Asn	Xaa	Trp	Ile	Pro	Arg	Ala	Ala	Gly	Ile	Gln	Ala	Val	Gly	Arg	Met
		20						25					30		
Ser	Pro	Leu	Arg	Gln	Arg	Ala	Ala	Ala	Trp	Cys	Pro	Xaa	Leu	Gln	Arg
	35					40						45			
Lys	Pro	Asn	Leu	Ser	Leu	Cys	Leu	Pro	Thr	Xaa	Leu	Xaa	Arg	Arg	Ala
	50					55					60				
Leu	Pro	Arg	Asp	Ser	Ser	His	Gly	Arg	Lys	Ala	Gly	Thr	Gly	Ser	Arg
65					70					75					80
Leu	Pro	His	Leu	Gln	Ala	Thr	Trp	Ala	Ser	Pro	Leu	Pro	Ile	Ser	Gln
				85					90					95	
Lys	Gly	Leu	Ala	Thr	Arg	Pro	Gly	Ser	Pro	Arg	Ile	Thr	Thr	Trp	Pro
		100						105					110		
Cys	Ser	Gly	Pro	Ala	Trp	Trp	His	Gly	Pro	Leu	Arg	Pro	Arg	His	Arg
		115					120					125			

Ala Arg Arg Arg Leu Gln Pro Gln Pro Ala Gly Arg Arg Leu Arg Arg  
 130 135 140  
 Ser Gly Gly Gly Arg Arg Xaa Thr Ser Val Cys Cys Leu Arg Arg Arg  
 145 150 155 160  
 Leu Leu Asp Pro Gln Xaa Ala Thr Gln Arg Arg Ala Gln Glu Asp Val  
 165 170 175  
 Pro Ser Leu Gly Ala Leu Ala Arg Thr Ser Glu Asp Gly Gly Pro Val  
 180 185 190  
 Cys Leu Leu Pro Cys Leu Lys Ala Ala Trp Gly Phe Phe Ser Pro Ser  
 195 200 205  
 Ser Phe Pro Leu Cys Met Xaa Asn Thr Val Lys Lys Leu Pro Trp His  
 210 215 220  
 Phe Ala Asp Leu Leu Leu Glu Met His Ser Pro Ala Ala Pro Glu Leu  
 225 230 235 240  
 Leu Pro Ala Thr Ser  
 245

<210> 6  
 <211> 266  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> SIMILAR  
 <222>  
 <223> Xaa is any aa

<400> 6  
 Xaa Arg Glu Gln Lys Leu Glu Leu His Arg Gly Gly Gly Arg Ser Arg  
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 Thr Ser Gly Ser Pro Gly Leu Gln Glu Phe Lys Arg Trp Glu Gly Cys  
 20 25 30  
 Leu Arg Xaa Gly Arg Glu Gln Gln His Gly Ala Arg Asp Tyr Arg Gly  
 35 40 45  
 Ser Gln Thr Cys Pro Tyr Ala Cys Pro His Ser Cys Asp Ala Glu His  
 50 55 60  
 Tyr Gln Gly Thr His Arg Thr Glu Gly Arg Gln Val Pro Gly Ala Ala  
 65 70 75 80  
 Ser His Thr Ser Arg Leu Arg Gly His Pro His Cys Arg Phe Pro Arg  
 85 90 95  
 Arg Ala Leu Pro Pro Gly Gln Glu Ala Pro Gly Leu Gln Arg Gly Pro  
 100 105 110

Ala Ala Val Pro His Gly Gly Thr Ala His Xaa Gly Pro Gly Thr Gly  
 115 120 125  
 Pro Asp Ala Ala Cys Ser Arg Ser Gln Pro Ala Gly Gln Gln Ala Thr  
 130 135 140  
 Val Ala Gln Ala Gln Arg Arg Arg Pro Thr Pro Arg Ala Leu Pro Gly  
 145 150 155 160  
 Ala Gly Phe Ala Gly Ala Glu Glu Asp Glu Asp Glu Gln Val Ser Ala  
 165 170 175  
 Val Xaa Gly Ala Gly Ser Leu Ile His Ser Glu Pro Pro Lys Gly Glu  
 180 185 190  
 His Lys Lys Thr Ser Gln Ala Leu Glu Pro Trp His Ala His Leu Arg  
 195 200 205  
 Met Val Asp Gln Phe Ala Ser Phe Pro Ala Leu Lys Gln His Gly Ala  
 210 215 220  
 Ser Ser Pro Leu Leu Pro Phe Pro Phe Ala Cys Glu Ile Leu Xaa Arg  
 225 230 235 240  
 Asn Cys Pro Gly Thr Leu Gln Thr Cys Cys Leu Lys Cys Thr Ala Gln  
 245 250 255  
 Gln Pro Leu Ser Cys Cys Leu Pro Arg His  
 260 265

<210> 7  
 <211> 307  
 <212> PRT  
 <213> Drosophila melanogaster

<400> 7  
 Ser Asn Val His Phe Leu His Leu Asn Ala Tyr Glu Leu Ala Ile Gln  
 1 5 10 15  
 Leu Thr Leu Gln Asp Phe Ala Asn Phe Arg Gln Ile Glu Ser Thr Glu  
 20 25 30  
 Tyr Val Asp Glu Leu Phe Glu Leu Arg Ser Arg Tyr Gly Val Pro Met  
 35 40 45  
 Leu Ser Lys Phe Ala Glu Leu Val Asn Arg Glu Met Phe Trp Val Val  
 50 55 60  
 Ser Glu Ile Cys Ala Glu His Asn Ile Val Arg Arg Met Lys Ile Val  
 65 70 75 80  
 Lys Gln Phe Ile Lys Ile Ala Arg His Cys Lys Glu Cys Arg Asn Phe  
 85 90 95  
 Asn Ser Met Phe Ala Ile Val Ser Gly Leu Gly His Gly Ala Val Ser



100					105					110						
Arg	Leu	Arg	Gln	Thr	Trp	Glu	Lys	Leu	Pro	Ser	Lys	Tyr	Gln	Arg	Leu	
115					120					125						
Phe	Asn	Asp	Leu	Gln	Asp	Leu	Met	Asp	Pro	Ser	Arg	Asn	Met	Ser	Lys	
130					135					140						
Tyr	Arg	Gln	Leu	Val	Ser	Ala	Glu	Leu	Leu	Ala	Gln	His	Pro	Ile	Ile	
145					150					155					160	
Pro	Phe	Tyr	Pro	Ile	Val	Lys	Lys	Asp	Leu	Thr	Phe	Ile	His	Leu	Gly	
165					170					175						
Asn	Asp	Thr	Arg	Val	Asp	Gly	Leu	Val	Asn	Phe	Glu	Lys	Leu	Arg	Met	
180					185					190						
Leu	Ala	Lys	Glu	Val	Arg	Leu	Leu	Thr	His	Met	Cys	Ser	Ser	Pro	Tyr	
195					200					205						
Asp	Leu	Leu	Ser	Ile	Leu	Glu	Leu	Lys	Gly	Gln	Ser	Pro	Ser	Asn	Ala	
210					215					220						
Leu	Phe	Ser	Leu	Asn	Gln	Met	Ser	Ala	Ser	Gln	Ser	Asn	Ala	Ala	Ala	
225					230					235					240	
Gly	Thr	Val	Ile	Ala	Ala	Asn	Ala	Gly	Gln	Ala	Thr	Ile	Lys	Arg	Arg	
245					250					255						
Lys	Lys	Ser	Thr	Ala	Ala	Pro	Asn	Pro	Lys	Lys	Met	Phe	Glu	Glu	Ala	
260					265					270						
Gln	Met	Val	Arg	Arg	Val	Lys	Ala	Tyr	Leu	Asn	Ser	Leu	Lys	Ile	Leu	
275					280					285						
Ser	Asp	Glu	Asp	Leu	Leu	His	Lys	Phe	Ser	Leu	Glu	Cys	Glu	Pro	Ala	
290					295					300						
His Gly Ser																
305																

<210> 8  
 <211> 270  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Ser Ala Glu Gly Leu Asp Leu Val Ser Ala Lys Asp Leu Ala Gly Gln  
 1 5 10 15  
 Leu Thr Asp His Asp Trp Ser Leu Phe Asn Ser Ile His Gln Val Glu  
 20 25 30  
 Leu Ile His Tyr Val Leu Gly Pro Gln His Leu Arg Asp Val Thr Thr  
 35 40 45

Ala Asn Leu Glu Arg Phe Met Arg Arg Phe Asn Glu Leu Gln Tyr Trp  
 50 55 60  
 Val Ala Thr Glu Leu Cys Leu Cys Pro Val Pro Gly Pro Arg Ala Gln  
 65 70 75 80  
 Leu Leu Arg Lys Phe Ile Lys Leu Ala Ala His Leu Lys Glu Gln Lys  
 85 90 95  
 Asn Leu Asn Ser Phe Phe Ala Val Met Phe Gly Leu Ser Asn Ser Ala  
 100 105 110  
 Ile Ser Arg Leu Ala His Thr Trp Glu Arg Leu Pro His Lys Val Arg  
 115 120 125  
 Lys Leu Tyr Ser Ala Leu Glu Arg Leu Leu Asp Pro Ser Trp Asn His  
 130 135 140  
 Arg Val Tyr Arg Leu Ala Leu Ala Lys Leu Ser Pro Pro Val Ile Pro  
 145 150 155 160  
 Phe Met Pro Leu Leu Leu Lys Asp Met Thr Phe Ile His Glu Gly Asn  
 165 170 175  
 His Thr Leu Val Glu Asn Leu Ile Asn Phe Glu Lys Met Arg Met Met  
 180 185 190  
 Ala Arg Ala Ala Arg Met Leu His His Cys Arg Ser His Asn Pro Val  
 195 200 205  
 Pro Leu Ser Pro Leu Arg Ser Arg Val Ser His Leu His Glu Asp Ser  
 210 215 220  
 Gln Val Ala Arg Ile Ser Thr Cys Ser Glu Gln Ser Leu Ser Thr Arg  
 225 230 235 240  
 Ser Pro Ala Ser Thr Trp Ala Tyr Val Gln Gln Leu Lys Val Ile Asp  
 245 250 255  
 Asn Gln Arg Glu Leu Ser Arg Leu Ser Arg Glu Leu Glu Pro  
 260 265 270

<210> 9

<211> 244

<212> PRT

<213> Mus musculus

<400> 9

Lys Ala Glu Cys Phe Glu Thr Leu Ser Ala Met Glu Leu Ala Glu Gln  
 1 5 10 15  
 Ile Thr Leu Leu Asp His Ile Val Phe Arg Ser Ile Pro Tyr Glu Glu  
 20 25 30  
 Phe Leu Gly Gln Gly Trp Met Lys Leu Asp Lys Asn Glu Arg Thr Pro  
 35 40 45

Tyr Ile Met Lys Thr Ser Gln His Phe Asn Glu Met Ser Asn Leu Val  
 50 55 60  
 Ala Ser Gln Ile Met Asn Tyr Ala Asp Ile Ser Ser Arg Pro Asn Ala  
 65 70 75 80  
 Ile Glu Lys Trp Val Ala Val Ala Asp Ile Cys Arg Cys Leu His Asn  
 85 90 95  
 Tyr Asn Gly Val Leu Glu Ile Thr Ser Ala Leu Asn Arg Ser Pro Ile  
 100 105 110  
 Tyr Arg Leu Lys Lys Thr Trp Ala Lys Val Ser Lys Gln Thr Lys Ala  
 115 120 125  
 Leu Met Asp Lys Leu Gln Lys Thr Val Ser Ser Glu Gly Arg Phe Lys  
 130 135 140  
 Asn Leu Arg Glu Thr Leu Lys Asn Cys Asn Pro Pro Ala Val Pro Tyr  
 145 150 155 160  
 Leu Gly Met Tyr Leu Thr Asp Leu Ala Phe Ile Glu Glu Gly Thr Pro  
 165 170 175  
 Asn Phe Thr Glu Glu Gly Leu Val Asn Phe Ser Lys Met Arg Met Ile  
 180 185 190  
 Ser His Ile Ile Arg Glu Ile Arg Gln Phe Gln Gln Thr Ala Tyr Arg  
 195 200 205  
 Ile Asp Gln Gln Pro Lys Val Ile Gln Tyr Leu Leu Asp Lys Ala Leu  
 210 215 220  
 Val Ile Asp Glu Asp Ser Leu Tyr Glu Leu Ser Leu Lys Ile Glu Pro  
 225 230 235 240  
 Arg Leu Pro Ala

<210> 10  
 <211> 249  
 <212> PRT  
 <213> Homo sapiens

<400> 10  
 Asp Glu Ile Thr Leu Leu Thr Leu His Pro Leu Glu Leu Ala Arg Gln  
 1 5 10 15  
 Leu Thr Leu Leu Glu Phe Glu Met Tyr Lys Asn Val Lys Pro Ser Glu  
 20 25 30  
 Leu Val Gly Ser Pro Trp Thr Lys Lys Asp Lys Glu Val Lys Ser Pro  
 35 40 45  
 Asn Leu Leu Lys Ile Met Lys His Thr Thr Asn Val Thr Arg Trp Ile

50

55

60

Glu Lys Ser Ile Thr Glu Ala Glu Asn Tyr Glu Glu Arg Leu Ala Ile  
65 70 75 80

Met Gln Arg Ala Ile Glu Val Met Met Val Met Leu Glu Leu Asn Asn  
85 90 95

Phe Asn Gly Ile Leu Ser Ile Val Ala Ala Met Gly Thr Ala Ser Val  
100 105 110

Tyr Arg Leu Arg Trp Thr Phe Gln Gly Leu Pro Glu Arg Tyr Arg Lys  
115 120 125

Phe Leu Glu Glu Cys Arg Glu Leu Ser Asp Asp His Leu Lys Lys Tyr  
130 135 140

Gln Glu Arg Leu Arg Ser Ile Asn Pro Pro Cys Val Pro Phe Phe Gly  
145 150 155 160

Arg Tyr Leu Thr Asn Ile Leu His Leu Glu Glu Gly Asn Pro Asp Leu  
165 170 175

Leu Ala Asn Thr Glu Leu Ile Asn Phe Ser Lys Arg Arg Lys Val Ala  
180 185 190

Glu Ile Ile Gly Glu Ile Gln Gln Tyr Gln Asn Gln Pro Tyr Cys Leu  
195 200 205

Asn Glu Glu Ser Thr Ile Arg Gln Phe Phe Glu Gln Leu Asp Pro Phe  
210 215 220

Asn Gly Leu Ser Asp Lys Gln Met Ser Asp Tyr Leu Tyr Asn Glu Ser  
225 230 235 240

Leu Arg Ile Glu Pro Arg Gly Cys Lys  
245

<210> 11

<211> 243

<212> PRT

<213> Homo sapiens

<400> 11

Val Ser Leu Leu Phe Asp His Leu Glu Pro Glu Glu Leu Ser Glu His  
1 5 10 15

Leu Thr Tyr Leu Glu Phe Lys Ser Phe Arg Arg Ile Ser Phe Ser Asp  
20 25 30

Tyr Gln Asn Tyr Leu Val Asn Ser Cys Val Lys Glu Asn Pro Thr Met  
35 40 45

Glu Arg Ser Ile Ala Leu Cys Asn Gly Ile Ser Gln Trp Val Gln Leu  
50 55 60

Met Val Leu Ser Arg Pro Thr Pro Gln Leu Arg Ala Glu Val Phe Ile  
 65 70 75 80  
 Lys Phe Ile Gln Val Ala Gln Lys Leu His Gln Leu Gln Asn Phe Asn  
 85 90 95  
 Thr Leu Met Ala Val Ile Gly Gly Leu Cys His Ser Ser Ile Ser Arg  
 100 105 110  
 Leu Lys Glu Thr Ser Ser His Val Pro His Glu Ile Asn Lys Val Leu  
 115 120 125  
 Gly Glu Met Thr Glu Leu Leu Ser Ser Ser Arg Asn Tyr Asp Asn Tyr  
 130 135 140  
 Arg Arg Ala Tyr Gly Glu Cys Thr Asp Phe Lys Ile Pro Ile Leu Gly  
 145 150 155 160  
 Val His Leu Lys Asp Leu Ile Ser Leu Tyr Glu Ala Met Pro Asp Tyr  
 165 170 175  
 Leu Glu Asp Gly Lys Val Asn Val His Lys Leu Leu Ala Leu Tyr Asn  
 180 185 190  
 His Ile Ser Glu Leu Val Gln Leu Gln Glu Val Ala Pro Pro Leu Glu  
 195 200 205  
 Ala Asn Lys Asp Leu Val His Leu Leu Thr Leu Ser Leu Asp Leu Tyr  
 210 215 220  
 Tyr Thr Glu Asp Glu Ile Tyr Glu Leu Ser Tyr Ala Arg Glu Pro Arg  
 225 230 235 240  
 Asn His Arg

<210> 12

<211> 48

<212> PRT

<213> Unknown Organism

<220>

<223> Description of Unknown Organism: unavailable

<400> 12

Ile Arg Gly Gly Thr Lys Glu Ala Leu Ile Glu His Leu Thr Ser His  
 1 5 10 15

Glu Leu Val Asp Ala Ala Phe Asn Val Thr Met Leu Ile Thr Phe Arg  
 20 25 30

Ser Ile Leu Thr Thr Arg Glu Phe Phe Tyr Ala Leu Ile Tyr Arg Tyr  
 35 40 45

<210> 13  
<211> 47  
<212> PRT  
<213> Mus musculus

<400> 13  
Ile Lys Gly Gly Thr Val Val Lys Leu Ile Glu Arg Leu Thr Tyr His  
1 5 10 15  
Met Tyr Ala Asp Pro Asn Phe Val Arg Thr Phe Leu Thr Tyr Arg Ser  
20 25 30  
Phe Cys Lys Gln Glu Leu Leu Asn Leu Leu Ile Glu Arg Phe Glu  
35 40 45

<210> 14  
<211> 48  
<212> PRT  
<213> Mus musculus

<400> 14  
Ile Arg Tyr Ala Ser Val Glu Ala Leu Leu Glu Arg Leu Thr Asp Leu  
1 5 10 15  
Arg Phe Leu Ser Ile Asp Phe Leu Asn Thr Phe Leu His Thr Tyr Arg  
20 25 30  
Ile Phe Thr Thr Ala Thr Val Val Leu Ala Lys Leu Ser Asp Ile Tyr  
35 40 45

<210> 15  
<211> 50  
<212> PRT  
<213> Unknown Organism

<220>  
<221> SIMILAR  
<222>  
<223> Xaa is any aa

<220>  
<223> Description of Unknown Organism: unavailable

<400> 15  
Val Val Lys Phe Ala Ser Leu Asn Lys Leu Val Glu His Leu Thr His  
1 5 10 15  
Asp Ser Lys His Asp Leu Gln Phe Leu Lys Thr Phe Leu Met Thr Tyr  
20 25 30

Gln Ser Phe Cys Thr Pro Glu Lys Leu Met Ser Lys Leu Gln Gln Arg  
35 40 45

Tyr Xaa  
50

<210> 16  
<211> 77  
<212> PRT  
<213> Drosophila melanogaster

<400> 16  
Leu Thr Arg Ser Ser Arg Asp Glu Pro Leu Asn Phe Arg Ile Val Gly  
1 5 10 15

Gly Tyr Glu Leu Arg Gly Val Ala Ile Ala Thr Gly Asn Ala Ala Val  
20 25 30

Gly Ile Tyr Ile Ser His Val Glu Pro Gly Ser Lys Ala Gln Asp Val  
35 40 45

Gly Leu Lys Arg Gly Asp Gln Ile His Glu Val Asn Gly Gln Ser Leu  
50 55 60

Asp His Val Thr Ser Lys Arg Ala Leu Glu Ile Leu Thr  
65 70 75

<210> 17  
<211> 71  
<212> PRT  
<213> Homo sapiens

<400> 17  
Asn Leu Lys Lys Asp Ala Lys Tyr Gly Leu Gly Phe Gln Ile Ile Gly  
1 5 10 15

Gly Glu Lys Met Gly Arg Leu Asp Leu Gly Ile Phe Ile Ser Ser Val  
20 25 30

Ala Pro Gly Gly Pro Ala Asp Leu Asp Gly Cys Leu Lys Pro Gly Asp  
35 40 45

Arg Leu Ile Ser Val Asn Ser Val Ser Leu Glu Gly Val Ser His His  
50 55 60

Ala Ala Ile Glu Ile Leu Gln  
65 70

<210> 18  
<211> 67  
<212> PRT  
<213> Homo sapiens

<400> 18

Ile Val Ile His Arg Gly Ser Thr Gly Leu Gly Phe Asn Ile Val Gly  
 1 5 10 15  
 Gly Glu Asp Gly Glu Gly Ile Phe Ile Ser Phe Ile Leu Ala Gly Gly  
 20 25 30  
 Pro Ala Asp Leu Ser Gly Glu Leu Arg Lys Gly Asp Gln Ile Leu Ser  
 35 40 45  
 Val Asn Gly Val Asp Leu Arg Asn Ala Ser His Glu Gln Ala Ala Ile  
 50 55 60  
 Ala Leu Lys  
 65

<210> 19  
 <211> 68  
 <212> PRT  
 <213> Rattus rattus

<400> 19  
 Val Glu Leu Pro Lys Thr Glu Glu Gly Leu Gly Phe Asn Ile Met Gly  
 1 5 10 15  
 Gly Lys Glu Gln Asn Ser Pro Ile Tyr Ile Ser Arg Ile Ile Pro Gly  
 20 25 30  
 Gly Ile Ala Asp Arg His Gly Gly Leu Lys Arg Gly Asp Gln Leu Leu  
 35 40 45  
 Ser Val Asn Gly Val Ser Val Glu Gly Glu His His Glu Lys Ala Val  
 50 55 60  
 Glu Leu Leu Lys  
 65

<210> 20  
 <211> 65  
 <212> PRT  
 <213> Homo sapiens

<400> 20  
 Val Lys Val Gln Lys Gly Ser Glu Pro Leu Gly Ile Ser Ile Val Ser  
 1 5 10 15  
 Gly Glu Lys Gly Gly Ile Tyr Val Ser Lys Val Thr Val Gly Ser Ile  
 20 25 30  
 Ala His Gln Ala Gly Leu Glu Tyr Gly Asp Gln Leu Leu Glu Phe Asn  
 35 40 45  
 Gly Ile Asn Leu Arg Ser Ala Thr Glu Gln Gln Ala Arg Leu Ile Ile  
 50 55 60  
 Gly



65

<210> 21  
<211> 98  
<212> PRT  
<213> *Drosophila melanogaster*

<400> 21

Met	Val	Phe	Ala	Val	Val	Asp	Lys	Ala	Gly	Thr	Val	Val	Met	Ser	Asp
1				5					10					15	
Gly	Glu	Glu	Leu	Asp	Ser	Trp	Ser	Val	Leu	Ile	Asn	Gly	Ala	Val	Glu
			20					25					30		
Ile	Glu	His	Ala	Asn	Gly	Ser	Arg	Glu	Glu	Leu	Gln	Met	Gly	Asp	Ser
		35					40					45			
Phe	Gly	Ile	Leu	Pro	Thr	Met	Asp	Lys	Leu	Tyr	His	Arg	Gly	Val	Met
	50					55					60				
Arg	Thr	Lys	Cys	Asp	Asp	Cys	Gln	Phe	Val	Cys	Ile	Thr	Gln	Thr	Asp
65					70					75					80
Tyr	Tyr	Arg	Ile	Gln	His	Gln	Gly	Glu	Glu	Asn	Thr	Arg	Arg	His	Glu
			85						90					95	

Asp Glu

<210> 22  
<211> 99  
<212> PRT  
<213> *Homo sapiens*

<400> 22

Leu	Leu	Phe	Glu	Pro	His	Ser	Lys	Ala	Gly	Thr	Val	Leu	Phe	Ser	Gln
1				5					10					15	
Gly	Asp	Lys	Gly	Thr	Ser	Trp	Tyr	Ile	Ile	Trp	Lys	Gly	Ser	Val	Asn
			20					25					30		
Val	Val	Thr	His	Gly	Lys	Gly	Leu	Val	Thr	Thr	Leu	His	Glu	Gly	Asp
		35					40					45			
Asp	Phe	Gly	Gln	Leu	Ala	Leu	Val	Asn	Asp	Ala	Pro	Arg	Ala	Ala	Thr
	50					55					60				
Ile	Ile	Leu	Arg	Glu	Asp	Asn	Cys	His	Phe	Leu	Arg	Val	Asp	Lys	Gln
65					70					75					80
Asp	Phe	Asn	Arg	Ile	Ile	Lys	Asp	Val	Glu	Ala	Lys	Thr	Met	Arg	Leu
			85						90					95	

Glu Glu His

<210> 23  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 23

Ala	Met	Phe	Pro	Val	Thr	His	Ile	Ala	Gly	Glu	Thr	Val	Ile	Gln	Gln
1				5					10					15	
Gly	Asn	Glu	Gly	Asp	Asn	Phe	Tyr	Val	Val	Asp	Gln	Gly	Glu	Val	Asp
		20						25					30		
Val	Tyr	Val	Asn	Gly	Glu	Trp	Val	Thr	Asn	Ile	Ser	Glu	Gly	Gly	Ser
		35					40					45			
Phe	Gly	Glu	Leu	Ala	Leu	Ile	Tyr	Gly	Thr	Pro	Arg	Ala	Ala	Thr	Val
	50					55					60				
Lys	Ala	Lys	Thr	Asp	Leu	Lys	Leu	Trp	Gly	Ile	Asp	Arg	Asp	Ser	Tyr
65					70					75					80
Arg	Arg	Ile	Leu	Met	Gly	Ser	Thr	Leu	Arg	Lys	Arg	Lys	Met	Tyr	Glu
			85						90					95	

Glu

<210> 24  
<211> 97  
<212> PRT  
<213> Homo sapiens

<400> 24

Cys	Met	Tyr	Gly	Arg	Asn	Tyr	Gln	Gln	Gly	Ser	Tyr	Ile	Ile	Lys	Gln
1					5				10					15	
Gly	Glu	Pro	Gly	Asn	His	Ile	Phe	Val	Leu	Ala	Glu	Gly	Arg	Leu	Glu
			20					25					30		
Val	Phe	Gln	Gly	Glu	Lys	Leu	Leu	Ser	Ser	Ile	Pro	Met	Trp	Thr	Thr
		35					40					45			
Phe	Gly	Glu	Leu	Ala	Ile	Leu	Tyr	Asn	Cys	Thr	Arg	Thr	Ala	Ser	Val
	50					55					60				
Lys	Ala	Ile	Thr	Asn	Val	Lys	Thr	Trp	Ala	Leu	Asp	Arg	Glu	Val	Phe
65					70					75					80
Gln	Asn	Ile	Met	Arg	Arg	Thr	Ala	Gln	Ala	Arg	Asp	Glu	Gln	Tyr	Arg
			85						90					95	

Asn

<210> 25  
<211> 103  
<212> PRT  
<213> Mus musculus

<400> 25

Arg	Leu	Arg	Ser	Val	Val	Tyr	Leu	Pro	Asn	Asp	Tyr	Val	Cys	Lys	Lys
1				5				10						15	
Gly	Glu	Ile	Gly	Arg	Glu	Met	Tyr	Ile	Ile	Gln	Ala	Gly	Gln	Val	Gln
			20					25					30		
Val	Leu	Gly	Gly	Pro	Asp	Gly	Lys	Ser	Val	Leu	Val	Thr	Leu	Lys	Ala
		35					40					45			
Gly	Ser	Val	Phe	Gly	Glu	Ile	Ser	Leu	Leu	Ala	Val	Gly	Gly	Gly	Asn
	50					55					60				
Arg	Arg	Thr	Ala	Asn	Val	Val	Ala	His	Gly	Phe	Thr	Asn	Leu	Phe	Ile
	65				70					75					80
Leu	Asp	Lys	Lys	Asp	Leu	Asn	Glu	Ile	Leu	Val	His	Tyr	Pro	Glu	Ser
				85					90						95
Gln	Lys	Leu	Leu	Arg	Lys	Lys									
			100												

<210> 26  
<211> 91  
<212> PRT  
<213> Unknown Organism

<220>

<223> Description of Unknown Organism: unavailable

<400> 26

Arg	Glu	Asp	Phe	Glu	Ile	Ile	Arg	Val	Phe	Asp	Gly	Asn	Asn	Ser	Tyr
1				5				10						15	
Arg	Ser	Gln	Ile	Ser	Arg	Asn	Ile	Val	Val	Ala	Lys	His	Val	Ser	Val
			20					25					30		
Gln	Gln	Val	Arg	Asp	Ala	Ala	Leu	Arg	Arg	Phe	His	Ile	Asn	Asp	Thr
		35					40					45			
Pro	Glu	Arg	Tyr	Tyr	Ile	Thr	Gln	Val	Val	Gly	Glu	Val	Glu	Glu	Glu
	50					55					60				
Ile	Leu	Glu	Asp	Pro	Val	Pro	Leu	Arg	Asn	Val	Lys	Arg	Pro	Glu	Gly
	65				70					75					80
Lys	Arg	Ala	Gln	Ile	Phe	Ile	Arg	Tyr	Tyr	Asp					
				85						90					

<210> 27  
<211> 129  
<212> PRT  
<213> Unknown Organism

<220>

<223> Description of Unknown Organism: unavailable

<400> 27

Ser Ile Leu Val Thr Ser Gln Asp Lys Ala Pro Ser Val Ile Ser Arg  
1 5 10 15

Val Leu Lys Lys Asn Asn Arg Asp Ser Ala Val Ala Ser Glu Tyr Glu  
20 25 30

Leu Val Gln Leu Leu Pro Gly Glu Arg Glu Leu Thr Ile Pro Ala Ser  
35 40 45

Ala Asn Val Phe Tyr Ala Met Asp Gly Ala Ser His Asp Phe Leu Leu  
50 55 60

Arg His Gly Glu Gly Pro Leu Leu Leu His Leu Ala Ser Pro Val Ala  
65 70 75 80

Arg Leu Pro Gln Glu Leu Leu Arg Val Arg Glu Glu Gly Ala Pro Phe  
85 90 95

Pro Gly Ser Arg Pro Gln Gly Gly Arg Leu His Gly His Cys Ser Glu  
100 105 110

Glu Glu Ala Pro Leu Ala Tyr Arg Ser His Gly Val His Thr Arg Cys  
115 120 125

Gly